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Developing Young Exploration and Production Professionals To Solve the “Big Crew Change”

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Abstract

Analysis of SPE Membership age distribution reveals under-representation of those younger than 35 years and the average age approaching 50 years. Assuming this is representative of the global E&P industry, a large portion of the current industry workforce will retire within the next 10 years. It follows that attracting and retaining young people is a key strategy today for tomorrow’s successes.

The “big crew change” indicates the risk of a significant reduction of available E&P expertise available. Meanwhile, producing oil and gas fields are maturing and new finds are more complex to locate and develop. This means personnel will need to develop a larger cross-disciplinary skills base with each individual skill advancing to address the increasing complexity of operation. The development of young people should be carefully planned within E&P companies, since young professionals represent a vital asset and a major source of competitive advantage in the future.

Maintaining young professionals’ motivation and favouring their pro-activeness should achieve continuous growth, excellent performance and dedication to the industry. Existing E&P expertise plays a crucial role. Experienced personnel need to be actively involved in mentoring-coaching programs to facilitate and drive skills’ development in newer industry entrants. Organizations who do not pursue an agenda for speedy and comprehensive professional and technical development of their young employees risk their ability to follow future market trends. Such organizations will likely fail to maintain competitive innovation and change.

The paper describes the importance of young professionals in the E&P industry today, offering suggestions on the delicate theme of retention, motivation, performance, empowerment, and specialist versus cross-discipline skills development. Results from various international surveys of the comments of both young, and experienced, professionals are presented.

Introduction

Demographic analysis of age distribution of SPE members reveals under-representation of people younger than 35. With the average age rising to 48 years and assuming such statistics representative of the Oil and Gas industry at large, a large portion of the current workforce will retire within the next 10 years (Figure 1).

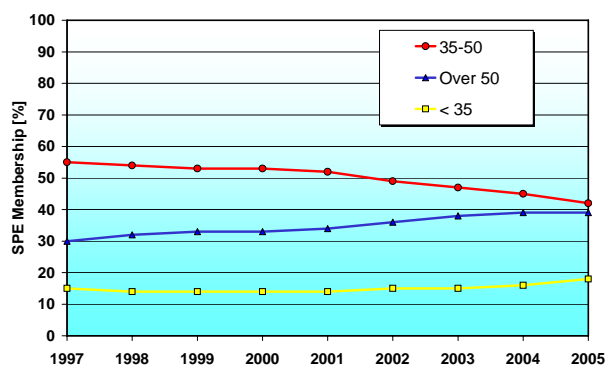


Figure 1- SPE population demographics with time

The following can also be observed:

- percentage of members under 50 years of age has decreased by about 3% per year;
- population of people over 50 years of age has increased with time reaching the value of 40% of the total population;
- young professionals population (under 35) does not replace the ageing workforce.

These trends cannot continue without damaging the competitiveness of the industry. E&P industry personnel are ageing and a decline in the creation of engineering talent is taking place. The average age of oilfield engineers has risen to 48, above 50 in the US. There are not enough recruits to sustain the \$200 billions planned investment in expansion over the next 15 years [Ref. 1]. The reasons for the current demographics are threefold [Ref. 2]:

- the merger boom at the end of the 1990s, coinciding with depressed oil prices, saw hundreds of thousands of people quit the industry;

- image of E&P as low-tech, dirty, sun-set industry makes it less attractive for young people to start a career;
- competition from other industries.

In any case, these trends do not relate to the E&P sector only: the population of older people is increasing in many regions in the world. In 2004, more than 9 percent of the overall Asia-Pacific's population was 60 or older. By 2050, that figure will reach 23.5 percent. The business implications of this demographic shift are now a priority in many companies and government-linked enterprises [Ref. 3].

The talent gap has prompted several E&P companies to return to university careers fairs after abandoning them some years ago. However, there is much to do to rebuild the supply of engineering graduates. By 2002, before the recent modest improvement, the flow of potential recruits had halved from the last peak in 1983.

How do companies cope with this?

Large international companies have less trouble attracting staff given their high profile and training programmes, but they still face challenges, mainly with respect to employee retention.

Some companies have turned to new technology to minimise the number of skilled staff they require. The "digital oilfield" concept is allowing projects to be operated with fewer engineers at the well site. Multinationals are replacing UK and US recruits in overseas postings in oil-rich but turbulent countries, by increasing local staff numbers. Many companies are seeking to retain staff beyond the normal retirement age, though this is amplifying wage inflation in a business already struggling with costs.

The industry is facing difficulties in replacing an ageing workforce and attract smart young graduates. The above might actually be concealing two opposite tendencies: far-sighted companies keeping a watchful eye on talented young employees (rewarding & retaining them), and short-sighted companies dismissing the departure of a young workforce as intrinsic to today's buoyant marketplace.

This article represents a discussion on the delicate theme of young professionals development and motivation. It offers ideas for today's companies in their crucial, but difficult, task of attracting, developing, and retaining the pool of skilled resources to fuel the worldwide oil and gas industry. The young professionals perspective was used throughout this study – without neglecting the company side of the equation. In particular, a model to link the long-term financial performance of a company to the young professional performance was developed.

The content of this paper does not reflect the stance of any particular company or the SPE, but display only that authors' personal perception on the subject matter.

The growing complexity and technological challenges

Fields are maturing and fewer new discoveries are made. Technology research, development and innovation have been the recent answer to sustain the world's oil and gas production and will continue to be so. New developments in technology need people with strong technical knowledge who are able to

effectively deploy it. Meanwhile, more emphasis will be placed on integration of available technology. An example of this is the introduction of measurement and control techniques for production optimization. The employee of tomorrow will play a crucial role in the increasingly complex exploration and production industry.

A search on spe.org e-library using the keyword "challenge" as research criteria, highlights how new finds and resources are becoming more difficult to develop. The challenges in the E&P industry increase with time (Figure 2) and will continue to do so in the future. In the last 5 years, 40% of the SPE papers quote the word "challenge".

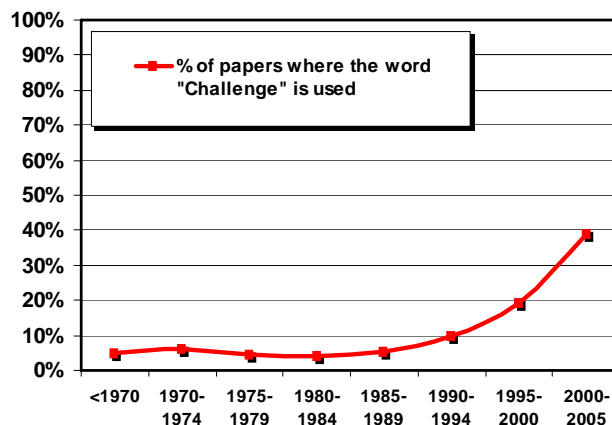


Figure 2: percentage of paper numbers versus time quoting the word "challenge" (from spe.org e-library search)

Company requirements for employee competence have changed as a result of these challenges. Historically, company performance was mainly dependant upon average performance of many people offering average results in terms of stability, efficiency, and individual performance. Today, this attitude is no longer enough and is driven by the complexities of a much more demanding and diverse market. Today, our people must have the capability for innovation, developing new ideas, and learning new subjects, and to extend our spectrum of capabilities in many different subjects. These skills are difficult to find and develop especially if we consider that existing oil and gas fields are maturing and new finds are more complex to produce. The coming challenges are even more difficult to face considering the ageing workforce and the need for "know-how" transfer from the extremely busy experts to the fresh and energetic young professionals.

Whether introducing new technology, or seeking to maximize the value of existing strategies, organisations are now recognising that it is the practices and behaviours of their personnel that determine whether their full potential is realized [Ref. 4].

Career paths for young professionals

Survey results from young E&P professionals clearly point out that two-thirds of respondents (around 700) desire cross-disciplinary moves within their company and believe that their company encourages such a move [Ref. 5]. Reasons given for changing disciplines are centered on gaining exposure to different areas of industry to build capabilities necessary for future management responsibility, keeping motivation high,

and offering new challenges. Respondents against a cross disciplinary move refer to the growing complexities of operations and the need for a deeper knowledge of each single subject, and to the potential loss of know-how.

Two thirds of young professionals surveyed seek a future in management [Ref. 6]. Only a small percentage is seeking technical specialist roles in any particular discipline. This presents its own problems given that we work in a technical industry where strong engineering is the backbone of operational success. Many believe that such moves are essential in order to gain the necessary experience to move into top management, and others believe that one can succeed by developing a high level of expertise within their own discipline. Some individuals clearly would prefer to contribute technically within their own discipline, while others prefer the variety and growth that accrues with being exposed to multiple disciplines. Companies seem to value both. Proven that the large majority of young professionals are positive about a discipline move, survey's results indicate that "Management and Information" represents the most wanted area to be considered for a career move followed by "Production and Operations".

Figure 3 displays a detailed analysis of the disciplinary preferences, with a focus on the largest discipline of responders - Engineering/Science. Management is by far the most desired discipline with around 45% of the preferences (the respondents could choose up to two disciplines among the list). Economics/planning, then operations follow with percentages around 20% of the responses each.

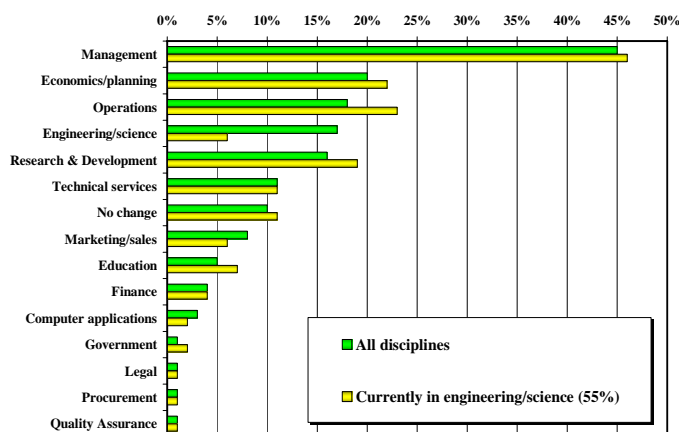


Figure 3: The preferred disciplines for a career move of today's young professionals [Ref. 5]

Results clearly indicate that young professionals are aiming for management roles. Given the increasing complexities of the operations and of the new hydrocarbon finds, it is likely that such "management positions" will have to be covered by people with strong technical skills. Sound technical skills represent the foundation of the historic success of the E&P industry and are required to face the new challenges. With regard to the fast changing requirements of the oil industry of today and tomorrow, it is crucial that companies prepare adequately the young professionals paying attention not only to technical but also to soft skills to help them to exercise leadership, deal with business issues to

directly contribute to corporate success and profitability. What actions have to be taken to make young professionals ready for the future responsibilities? These are discussed in the next sections where a performance model is presented.

Boosting the performance

Several studies point out that the *financial performance* of a company is strictly linked to the *employee performance*. By means of statistical analysis based on the data of about 750 companies worldwide, Watson Wyatt demonstrated in 1999 the direct link between Human Capital Index (HCI) and company financial performances. In particular it has been demonstrated that the HCI influences the financial performance more than the opposite. The strategy side of human capital management is a key differentiator for financially successful organizations [Ref. 3].

In today's "knowledge based economy", many intangibles like employee potential and competences are a critical factor for success. This is particularly true in the E&P industry in which an individual's competence is a major driver for success. It follows that the competitive advantage of tomorrow depends upon the quality of today's young professionals. The current attitudes of top and line management dictate the action plans for Young Professionals. A model was developed beginning with the company perspective (**Figure 4**). It clearly appears that today E&P companies have two important long term tasks with regards to their young professionals, these are:

- development
- retention.

Employee performance can be defined as the product of *Capabilities* and *Motivation* (**Figure 4**). Only by investing to develop young professionals skills and monitoring their motivation will the overall financial performance of the companies be maximized in the long run.

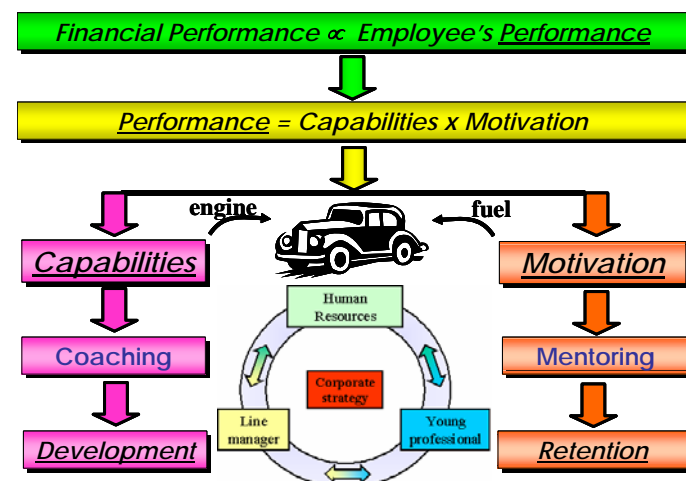


Figure 4: Overview of the Performance Boost model

The human capital positioning matrix depicted in **Figure 5** can be useful to express the final objective of skills and motivation development. X-axis shows capabilities as either low or high. Y-axis, gives level of motivation as low or high. The aim is to have employees with high capabilities and motivation. This is possible by increasing the level of MOTIVATION (passing

from quadrant A to C or from B to D), and of CAPABILITIES (from quadrant A to B or from C to D) (**Figure 5**). This means that only by acting on both MOTIVATION and CAPABILITIES can we actively influence employee and company PERFORMANCE.

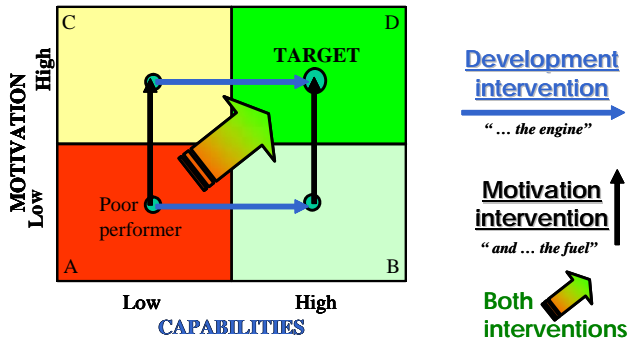


Figure 5: Performance improvement joint interventions

The positioning matrix of **Figure 6** can be adopted to understand where strategic resources stand. On the X-axis we find PERFORMANCE that can either be low or high. On the Y-axis we represent POTENTIAL, a quality which is intrinsic of each employee and cannot be modified by the company. The objective of the company is to have high performers, independently from the original potential. This means transforming “poor performers” into “soldiers”, and “problematic employees” into “champions”.

Today’s growing challenges and technical difficulties mean the core value of a company and the change capability is concentrated on few high potential employees (“champion”) rather than on many with average potential (“soldiers”). In this changing environment the “champion-talent” may be defined as the one who is able to adopt a high level of responsibility in a dynamic environment, and offer a high level of commitment and performance aligning their personal goals with the company.

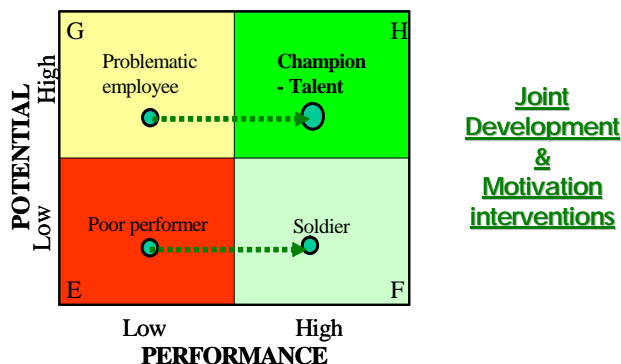


Figure 6: Human Capital Positioning Matrix: getting the most from the young professionals with a joint Development and Motivation intervention

“Soldiers” (i.e.: low potential with high performance employees) carry out most of the work and therefore play a crucial role. They can be considered as the source of technical know-how, of the company’s continuation. This larger pool requires the same level of attention in terms of motivation/development, even if the retention policies may be

easier and less costly with respect to those needed for champions/talent.

To obtain high employees performances and ultimately high financial performances, companies have to invest in both champions and soldiers. Investments are needed in two directions:

- development of capabilities
- monitoring of motivation.

The delicate balance between attention for both champions and soldiers needs to be managed accurately among the three actors depicted in **Figure 4**: the employee, the line manager and the human resource manager. The balance is made difficult by the existing contrast between two opposite needs: the talent’s desire for recognition and the company necessity of impartiality to its employees to reduce dissatisfaction in others. This has to be aligned with the corporate strategy [Ref. 7].

Development Intervention

Corporations have strong interests in developing their resources by means of accurately designed development programs. Development of young employees is a sum of training, on the job experience and mentoring & coaching. It can be expressed by the so-called “talent development equation” [Ref. 8]:

$$\text{Development} = 10\% \text{ Theory} + 50\% \text{ On-Job-Training} + 40\% \text{ Coaching \& Mentoring}$$

The equation indicates the essential role mentoring and coaching plays for the development of young employees. As described in **Figure 4**, coaching represents the most important action for the development of the skills and capabilities of the young professionals.

Coaching differs from *Mentoring*. *Coaching* aligns a young employee with an experienced person who will assist in the development of competences to cover the assigned role in the short-medium time frame. *Mentoring* is strongly focused on career development and is aimed at obtaining higher performances in the long term.

In December 2005 a survey about mentoring/coaching was performed during a mentoring event hosted by SPE Netherlands Section in cooperation with the Dutch SPE Young Exploration and Production Professionals. A representative mix of attendees from small, medium and large sized companies responded. All attendants recognized the importance of having a mentoring program within their company. About 75% thought that it would be beneficial to company in general. More than 50% considered a well planned mentoring/coaching program would be beneficial to solve potential problems associated with the “big crew change”, the other 50% responded that it would probably be beneficial, and none responded negative. Mentoring is valued mostly for career development and advice (50%), followed by technical skills development (33%). In general the mentees are less satisfied with the way mentoring/coaching is performed in their company compared to mentors.

Different companies have devised various forms of development of young resources, generally known as induction programs [Ref. 10 to 15].

In our model, the role of the coordinator becomes the one of the coach. This model of leadership is based upon authority, delegation, and development of the motivation. This would induce a higher involvement of the young hires with a faster and stronger development of their skills. Young professionals will feel more autonomous and unique and therefore, more motivated. Leadership and coaching from seniors who represent the E&P “know-how” provide the main driver for their development.

Motivation Intervention

High performance cannot be achieved simply by developing skills and capabilities. This represents a necessary, but not sufficient condition has *to come hand in hand with a high level of motivation*. In other words, coming back to **Figure 4**, once we built the “engine” (capabilities/skills) of our car (young professional), we need to fill it with “fuel” (motivation) to make it travel the “extra-mile” we desire. Furthermore, motivation represents a crucial aspect to establishing a long and fruitful cooperation with the company and one of the most significant drivers for the success of any retention policy.

Monitoring and developing people strategies aimed at maintaining a young employees motivation is the key to achieve successful retention rates and performances (**Figure 7**). The theme of retention and the trends of today’s E&P job market have been discussed in detail in another analysis [Ref. 7].

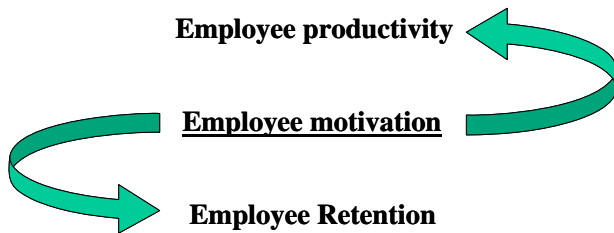


Figure 7: The centrality of Motivation in People Management [Ref. 6]

What are the motivating factors for today’s young professionals? To answer this question, the results from international surveys targeting young E&P professionals worldwide were analysed [Ref. 5]. The results were represented in **Figure 8** which is trying to mimic the Maslow’s hierarchy pyramid.

At the base we find the “marginal requirements”: they represent the parameters that are significant and offer a basic satisfaction, but that cannot be considered as sources of motivation. Moving up, factors like salary, achievements, recognition of work done become increasingly important; however they still can be considered as necessary but not sufficient for the motivation. At the pyramids peak, labeled as “the must have”, we find factors that truly influence motivation at work, these are: *job interest and challenges, work-life balance, and career opportunities*. These results

indicate that only by monitoring these three main factors together, companies can retain young professionals.

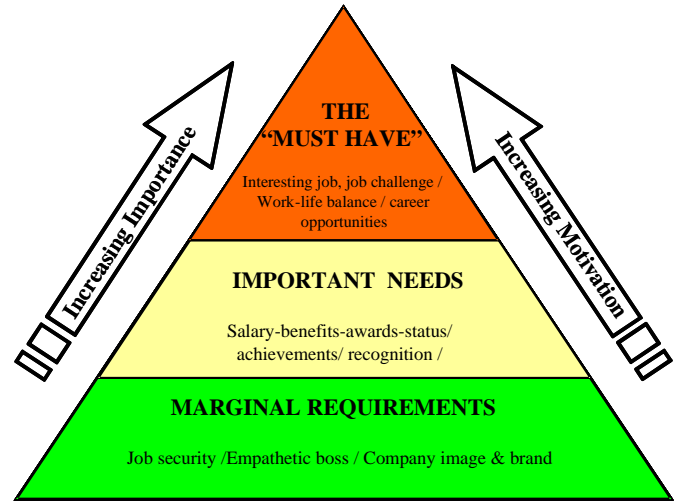


Figure 8: the pyramid of the motivating factors [Ref. 3]

It is interesting to note that salary, among the listed parameters, does not rank at the top of the list. To understand this aspect we can refer to Herzberg [Ref. 17]. In his study, Herzberg concluded that the parameter that generate dissatisfaction, are strictly related to the work context, while those that generate satisfaction are related to the work content. He defined the first set of parameters “*hygienic factors*”, and the second “*motivating factors*” (**Table 1**).

	Hygienic factors	Motivating factors
They refer to	Job context	Job content
If absent	generate dissatisfaction	do not generate dissatisfaction
If present	Does not generate <i>motivation</i>	Generate motivation
Examples	<ul style="list-style-type: none"> • Salary • Job environment • Personal relationships • Status • Stable corporate financial performance • ... 	<ul style="list-style-type: none"> • Achievements • Recognition • Responsibility • Job content • Career opportunities • Professional growth • ...

Table 1: Factors generating motivation according to the Herzberg’s model (from Herzberg, [Ref. 16,modified]).

When these last parameters are absent, dissatisfaction takes place; conversely, when they are present, they motivate and create a positive attitude towards work. Going back to **Figure 8**, Herzberg would have defined the “career opportunities” as a “motivating factor” and the “competitive salary” as a “hygienic factor”. This means that being paid a lot of money does not generate motivation, while it generates dissatisfaction in the opposite scenario (low salary). Conversely, having a clear career plan depicted and knowing

to have the possibility to achieve professional growth is a strong source of motivation. Therefore, leveraging just on salary, as some companies (especially the smaller ones) do, is not an ideal source of motivation, and definitively cannot be the only retention policy to be adopted. This is confirmed by the results of the survey presented in **Figure 8**.

Coaching and Mentoring needs

A good way to achieve development and retention of young professionals, previously described in the performance model, would be to offer:

- *empowerment* opportunities to maintain high motivation
- “*mentoring and coaching*” programs with the help of seniors, and who represent the E&P “know-how”.

In addition, the know-how transfer will have a multiple effect: young professional will act as “bridge” between the industry seniors and the future young professionals: the students.

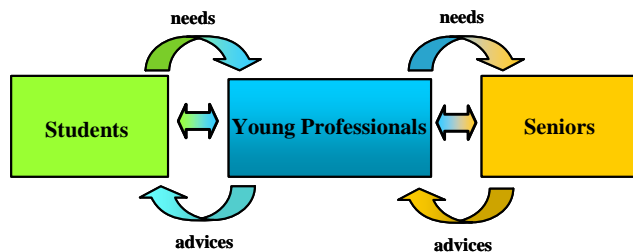


Figure 9: The young professionals acting as “know-how bridge” between seniors and students

Empowerment means, “coordinating by delegating”. Increasingly complex tasks are gradually given to the young professionals enabling them to feel useful, feel motivated, and increase their skills and intellectual capital. *This would go in the direction of focusing the career progression more on results and performance rather than working experience and age.* As a consequence, the degree of motivation and involvement would remain high helping their satisfaction and retention. This empowerment would reduce the generational gap of the E&P industry today and would energize it with fresh thoughts and ideas preparing the company for fast strategy reaction to today’s changing business environment. Able young professionals can provide fresh ideas, drive and enthusiasm to facilitate the management of change. The empowerment approach will also enforce the spirit of criticism of the employee, increasing the intellectual capital that comes into play for the strategy definition. With such approach, each employee better feels the sense of belonging to the organization and transforms from passive to pro-active.

Mentoring and coaching programs would allow the young professional to develop in a well balanced manner with respect to job-interest, work-life balance and career opportunities (**Figure 8**). This will keep the motivation of young people at a constant, high level. The goal is a continuous exchange of ideas between the experienced mentors and the young professionals [Ref. 17]. The aim is to reduce the distance between senior and young personnel and fill the generation gap. The attitude of the leader should be no longer the one of

“inspector”, but the one of a supporting co-worker, and mentor.

It follows that an empowerment and coaching approach will improve both the motivation and capabilities, and therefore the overall performance of young employees. It will move the points towards the target (**Figure 5**) leading to an improved long-term *financial performance* of the company.

Two musts: communication and transparency

When companies consistently share their goals, business plans and financial information, employees value the big picture and are more likely to remain engaged. Implementing communication practices to foster a culture of information exchange within the company has the multiple benefits of attracting, retaining and motivating a talented workforce. In addition, it reinforces the organization’s vision, connects employees to the business, fosters process improvement, facilitates change and drives business results by changing employee behavior. A study conducted between 2000 and 2004 [Ref. 18] demonstrated the correlation between communication effectiveness, organizational turnover and financial performance. Among the key findings, it was concluded that companies that communicate effectively:

- are 4.5 times more likely to report high levels of employee engagement versus firms that communicate less effectively;
- are 20 percent more likely to report lower turnover rates than their peers;
- have a 19.4 percent higher market premium than companies that do not.

It follows that for a successful implementation of the proposed model, the transparency has to be also maximized within the three actors of the system shown in **Figure 4**: the young professional, the human resources manager and the line manager.

Need for Investments – a business case

The above described development and motivation interventions cannot be achieved without investing on them. These investments have to be targeted to implement or improve the coaching/mentoring programs and achieve a higher and more efficient communication within the company.

Justifying to management the value of investment on intangibles is difficult. This comes with the difficulty to quantify the net present value of any intervention done toward human resources. The added value is difficult to quantify; on the other side, it is quite intuitive and easy to quantify the potential negative effect on the company’s capital and know-how of a loss of a talent or of mistakes done on the field due to wrong decisions. Investing on motivating young professionals we may avoid to loose him/her; by investing on his/her development we may avoid or at least reduce mistakes in the daily operations where the amount of money involved, in this business, are very relevant. Is a company ready to loose \$100,000 or more tomorrow because of the poor skills of the employee or does a company prefer to avoid this by investing today to motivate and develop the young employee? This is the business case to justify investments on young

professionals. By doing such kind of evaluations, we need to consider only the differential amount of investment that we do towards the young professional compared to what is already done as company practice. This amount is very limited and several thousands of times less than a potential loss that the lack of such investment may induce.

Investments on intangibles cannot have monetary evidence in the short term, but can have extremely high returns in the long term. Here again lies the link between employee performance and the company financial performance.

Conclusions

The *financial performance* of a company is strictly linked to the *employee performance*. This is particularly true in the increasingly complex E&P industry in which the people's competences are more and more the driver for success.

In the company's mission, sentences underlining the importance of people are very often present. People and in particular young professionals are quite often defined as "strategic assets", but then they are effectively managed as "costs to be minimized". This could jeopardize the development of skills and motivation of young employees. Such factors will become increasingly important for companies in order to achieve strong financial successes in tomorrow's increasingly more complex marketplace.

Empowerment and coaching programs and an effective communication within the company offer the opportunity to improve the motivation and capabilities of young employees, and therefore will improve the overall performance of young employees. Optimized employee performance is a necessity to optimize the long-term financial performance of the E&P company. Investments on intangibles cannot have monetary evidence in the short term, but can have extremely high returns in the long term. If organizations fail to transfer employee skills to the new generation, their competitive ability will be compromised.

Nomenclature

YEPPs = Young Exploration and Production Professionals

E&P = Exploration and Production

Acknowledgments

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